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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/473,448	12/28/1999	George Thangadurai	042390.P5761	9991

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EXAMINER

COLEMAN, ERIC

ART UNIT	PAPER NUMBER
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2183

DATE MAILED: 05/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/473,448

Applicant(s)

THANGADURAI ET AL.

Examiner

Eric Coleman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 5-28 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-3, 5-10 and 22-28 is/are allowed.
- 6) ☒ Claim(s) 11-21 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

1. Claims 1-3, 5-28 are presented for examination.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 18-21 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 18 is directed to an article of manufacture for use in digital processing system for storing a logic value in a programming code, the article manufacture comprising a machine readable medium having machine readable program code embodied in the medium, the program code comprising identifying...branching...utilizing...restoring...location. This article of manufacture comprises a machine readable medium. The machine readable medium can be a machine readable storage medium or a machine readable transmission medium. A machine readable transmission medium is does present the program in a manner that is tangibly embodied so as to be executable. Since the claim does not restrict the article of manufacture to a tangible embodiment the program code is abstract. The program is not embodied for in a manner to be executable by a data processing system and therefore claim 18 and the claims that depend on claim 18 are non-statutory.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 11-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beckert (patent No. 6,499,078) in view of Lindsley (patent No. 6,128,672).

6. Beckert taught the invention substantially as claimed including a data processing ("DP") system comprising:

Execution unit (microprocessor (30) (e.g., see fig. 30); and

Memory (interrupt array 40 of interrupt handler in fig. 2) coupled to the execution unit for storing a processor abstraction layer (e.g., see col. 1, lines 23-33) (interrupt handlers are taught as stored in the abstraction layer), the processor abstraction layer further including interrupt handlers further including a plurality of predefined sections wherein each of the predefined section corresponds to a logic value of a register (interrupt numbers 0-31 in fig. 2 for interrupt handler 32,34 each has mask bit logic values) where the logic value can be restored in response to the predefined sections (e.g., see col. 4, lines 3-15).

7. Beckert did not expressly detail a general purpose register file. Becker however taught a microprocessor (30). Conventional microprocessors comprise at least one register file at least to store instructions and/or data that is to be used in processing and requires quick access. Therefore One of ordinary skill would have been motivated to use microprocessor comprising registers at least to provided quick access to the instructions or data used in processing the processes that are interrupted using Beckert system.

8. Beckert did not expressly detail the interrupt handler including saving architecture state code. Lindsley however taught (e.g., see col. 34, lines 1-35) the interrupt service routine saves registers the processor registers and cleared task command register. [the interrupt service routine is comprises code for performing the operation of saving the registers that indicate the processor state].

9. It would have been obvious to one of ordinary skill to combine the teachings of Beckert and Linsley. Both references were directed to the problems of processing prioritized interrupts in a DP system. The addition of the particulars of interrupt handlers including the allowing for preemption of a lower priority task would allow the acceleration of task processing for the system (e.g., see col. 7, lines 4-31 of Linsley). Additionally the Lindsley the interrupt handler saving the register(discussed above) would have provided for efficient means to save the context when interrupting a process in the combined system (as both systems would have needed preserving of the context data during interrupt).

10. As per claims 12-17, The programming code as was well known in the art comprises multiple bit instructions and data for interrupt service routines and for performing data processing tasks therefore one of ordinary skill would have been motivated to store the code in a multiple bit wide register. Also at least during a power failure one of ordinary skill would have been motivated store the code in a non-volatile memory to ensure the code would not be lost. Further, Lindsley taught the saving /restoring of any register in the processor context (e.g., see col. 34, lines 11-35)[this would have included any restoring the logic value in the registers including the general

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purpose registers or other registers such as used for storing predicates. Also the restoring to memory clearly the when the system would have been restored after a power loss the registers and memory would have been restored at least in order to continue processing at the location the processing was performed when the power loss occurred.

Allowable Subject Matter

11. Claims 1-3,5-10,22-28 are allowed.

The following is an examiner's statement of reasons for allowance: The combination of features in independent claims 1 and 22 were not found in the prior art. The prior art comprises means and step for identifying a logic value in a register and utilizing the register as a scratch register(temporary register) during execution of programming code and means and step for restoring the logic value back to the register after execution of the programming code (e.g., see patent No. 5,737,625 col.2, lines 50-61 and col. 3, line 59-col. 5, line 44). However the additional feature of branching to a first predetermined location within programming code based on the first logic value was not found in the prior art. In fact the prior art taught against use of a program counter for a scratch register (e.g., see col. 33-52) (a program counter would contain an address to the instruction or program code to be executed).

Response to Arguments

Applicant's arguments with respect to claims 11-21 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Morrison (patent No. 6,279,102) disclosed a system employing single table renaming more than one claims of register (e.g., see abstract).

Lange (patent No. 6,289,435) disclosed reuse of special purposed register as general purpose registers

Bui (patent No. 6,487, 630) disclosed a processor with register stack engine with dynamically spills/fills physical registers (e.g., see abstract).

Graham (patent No. 5,978,857) disclosed a system with an abstraction layer (e.g, see fig. 3).

Mohamed (patent No. 5,966,734) disclosed a resizable and relocatable memory scratch pad as a cache slice (e.g., see abstract).

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric Coleman whose telephone number is (571) 272-4163. The examiner can normally be reached on Monday-Thursday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Chan can be reached on (571) 272-4162. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

EC



ERIC COLEMAN
PRIMARY EXAMINER